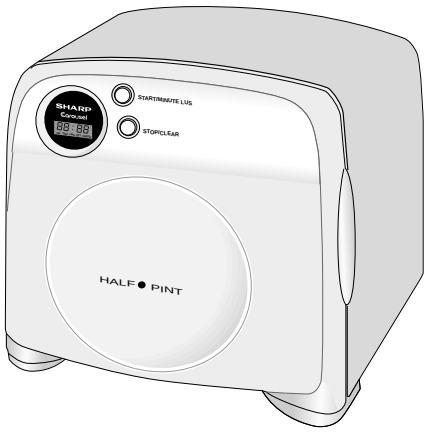
SHARP SERVICE MANUAL

S3007R120DPW/

MICROWAVE OVEN



MODELS **R-120DB**
R-120DK
R-120DR
R-120DW

In the interest of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

WARNING TO SERVICE PERSONNEL: Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..)

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SHARP CORPORATION

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The contents are subject to change without notice.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.
(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

BEFORE SERVICING

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.
If microwave emissions level is in excess of the specified limit, contact SHARP ELECTRONICS CORPORATION immediately @1-800-237-4277.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact SHARP ELECTRONICS CORPORATION and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of 4mW/cm^2. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

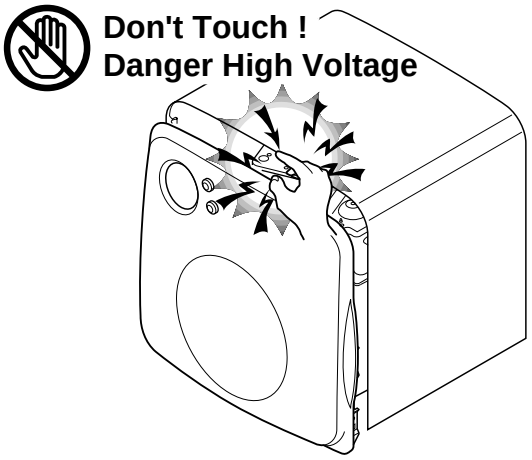
WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

Read the Service Manual carefully and follow all instructions.



Before Servicing

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORE SERVICING.

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the outer case (cabinet).
3. Reconnect the power supply cord after the outer case is installed.
4. Run the oven and check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

MICROWAVE MEASUREMENT PROCEDURE

A. Requirements:

1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed 1mW/cm^2 at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), 5 mW/cm^2 at any point 5cm or more from the external surface of the oven.
2) Safety interlock switches Primary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of the requirement as above mentioned, secondary interlock switch shall prevent microwave radiation emission in excess of 5 mW/cm^2 at any point 5cm or more from the external surface of the oven.

B. Preparation for testing:
Before beginning the actual measurement of leakage, proceed as follows:
1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:
Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

2) Place the oven tray in the oven cavity.
3) Place the load of 275±15 ml (9.8 oz) of tap water initially at 20±5˚C (68˚F) in the center of the oven cavity.
   The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.
   The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
4) Set the cooking control on Full Power Cooking Mode
5) Close the door and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-door leakage test (microwave measurement)
1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the door and the body of the oven.
2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
3) Check for leakage at the door screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).
   While testing for leakage around the door pull the door away from the front of the oven as far as is permitted by the closed latch assembly.
4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than 4mW/cm^2, and that the secondary interlock switch does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

SERVICE MANUAL

SHARP

MICROWAVE OVEN

R-120DB/ R-120DK/ R-120DR/ R-120DW

FOREWORD

This Manual has been prepared to provide Sharp Electronics Corp. Service Personnel with Operation and Service Information for the SHARP MICROWAVE OVEN, R-120DB, R-120DK, R-120DR, R-120DW.

It is recommended that service personnel carefully study the entire text of this manual so that they will be qualified to render satisfactory customer service.

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

WARNING

Never operate the oven until the following points are ensured.
(A) The door is tightly closed.
(B) The door brackets and hinges are not defective.
(C) The door packing is not damaged.
(D) The door is not deformed or warped.
(E) There is no other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

DANGER

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SHARP ELECTRONICS CORPORATION

**SHARP PLAZA, MAHWAH,
NEW JERSEY 07430-2135**

PRODUCT DESCRIPTION
GENERAL INFORMATION
OPERATION
TROUBLESHOOTING GUIDE AND TEST PROCEDURE
TOUCH CONTROL PANEL
COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE
WIRING DIAGRAM
PARTS LIST

PRODUCT DESCRIPTION

SPECIFICATIONS

ITEM	DESCRIPTION
Power Requirements	120 Volts 60 Hertz Single phase, 3 wire grounded
Power Consumption	1030W / Approx. 9 Amperes
Power Output	600 W nominal of RF microwave energy (IEC Test procedure) Operating frequency 2450 MHz
Case Dimensions	Width 14-3/8" Height 14-1/8" Depth 14"
Cooking Cavity Dimensions (0.7 Cubic feet)	Width 11-3/4" Height 16" Depth 11-7/8"
Control Complement	Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 minutes 45 seconds) POPCORN pad EXPRESS DEFROST pad COMPU COOK pad DOUBLE QUANTITY pad STOP/ CLEAR pad (STOP/CLEAR button) CLOCK/ TIMER pad 10 MINUTES pad 1 MINUTE pad 15 SECONDS pad START/ MINUTE PLUS button
Oven Cavity Light	Yes
Safety Standard	UL Listed. FCC Authorized DHHS Rules, CFR, Title 21, Chapter 1, Subchapter J

GENERAL INFORMATION

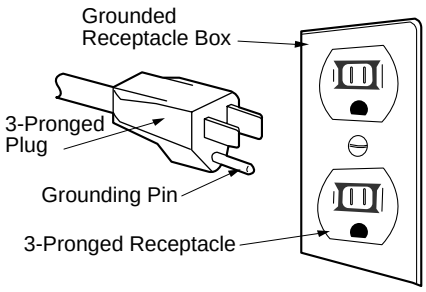
GROUNDING INSTRUCTIONS

This oven is equipped with a three prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances.
In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.

WARNING: Improper use of the grounding plug can result in a risk of electric shock.

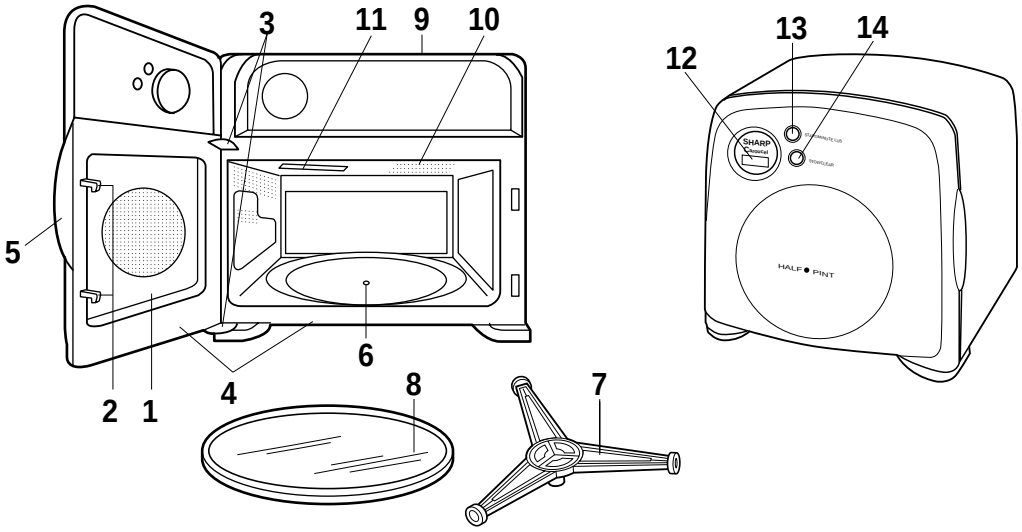
Electrical Requirements
The electrical requirements are a 115 -120 volt 60 Hz, AC only,
15 or 20 amp. fused electrical supply. It is recommended that a separate circuit serving only this appliance be provided. When installing this appliance, observe all applicable codes and ordinances.
A short power-supply cord is provided to reduce risks of becoming entangled in or tripping over a longer cord.
Where a two-pronged wall-receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have it replaced with a properly grounded three-pronged wall receptacle or have a grounding adapter properly grounded and polarized. If the extension cord must be used, it should be a 3-wire, 15 amp. or higher rated cord. Do not drape over a countertop or table where it can be pulled on by children or tripped over accidentally.

CAUTION: DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE ROUND GROUNDING PRONG FROM THIS PLUG.

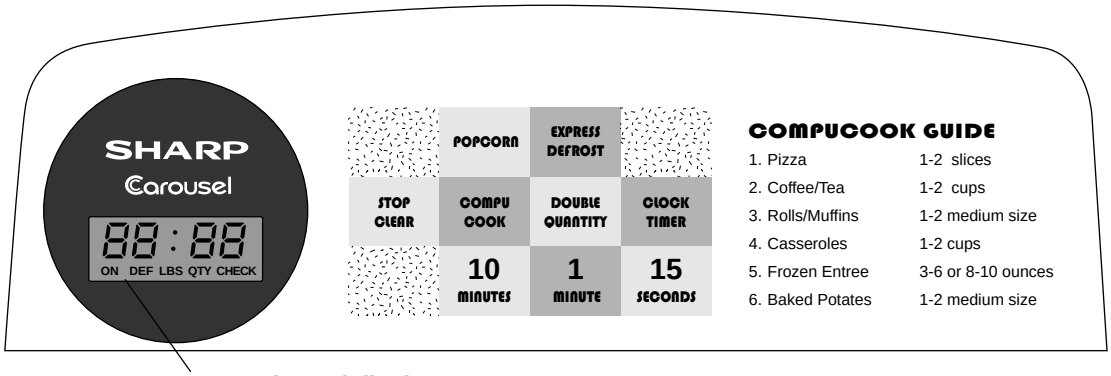


OVEN DIAGRAM

1. Oven door with see-through window
2. Safety door latches.
   The oven will not operate unless the door is securely closed.
3. Door hinges
4. Door seals and sealing surfaces
5. Door handle
   Pull to the open.
6. Turntable motor shaft
7. Removable turntable support
8. Removable turntable
   Place to turntable on the turntable support securely. The turntable will rotate clockwise or counterclockwise. Only remove for cleaning.
9. Ventilation openings. (Rear)
10. Oven light
    It will light when oven is operating.
11. Wave guide cover. DO NOT REMOVE.
12. Control panel display
13. Start/Minute Plus button
14. Stop/Clear button



TOUCH CONTROL PANEL



Control panel display
Wards will light in the display to indicate feature and cooking instructions.

NOTE:

1. **Open the door to program the oven.**
2. **The STOP/CLEAR and the START/MINUTE PLUS pads can be used even if the door closed.**
3. **MINUTE PLUS feature is disabled after one minute when the oven is not in use. This feature is automatically enabled when the door is opened and closed or the STOP/ CLEAR pad is pressed.**

OPERATION

DESCRIPTION OF OPERATING SEQUENCE

The following is a description of component functions during oven operation.

OFF CONDITION

Closing the door activates the door sensing switch and secondary interlock switch. (In this condition, the monitor switch contacts are opened.)
When the oven is plugged in, 120 volts A.C. is supplied to the control unit. (Figure O-1).

1. The display will show flashing "88:88".
   To set any program or set the clock, you must first touch the STOP/CLEAR pad. The display will clear, and " : " will appear.

COOKING CONDITION

Open the door. Program desired cooking time by touching the NUMBER pads. And program the power level by touching the POWER LEVEL pad and then a Number pad.
When close the door and the START pad is touched, the following operations occur:

1. The contacts of the relays are closed and components connected to the relays are turned on as follows.
   (For details, refer to Figure O-2)

RELAY	CONNECTED COMPONENTS
RY-1	oven lamp/turntable motor/fan motor
RY-2	power transformer

2. 120 volts A.C. is supplied to the primary winding of the power transformer and is converted to about 3.5 volts A.C. output on the filament winding, and approximately 2000 volts A.C. on the high voltage winding.
3. The filament winding voltage heats the magnetron filament and the H.V. winding voltage is sent to a voltage doubler circuit.
4. The microwave energy produced by the magnetron is channelled through the waveguide into the cavity feed-box, and then into the cavity where the food is placed to be cooked.
5. Upon completion of the cooking time, the power transformer, oven lamp, etc. are turned off, and the generation of microwave energy is stopped. The oven will revert to the OFF condition.
6. When the door is opened during a cook cycle, the monitor switch, door sensing switch, secondary interlock switch and primary interlock relay are activated with the following results. The circuits to the oven lamp, turntable motor, the cooling fan motor, and the high voltage components are de-energized, and the digital read-out displays the time still remaining in the cook cycle when the door was opened.
7. The monitor switch is electrically monitoring the operation of the secondary interlock switch and primary interlock relay (RY2) and is mechanically associated with the door so that it will function in the following sequence.

(1) When the door opens from the closed position, the secondary interlock switch, door sensing switch and primary interlock relay (RY2) open their contacts. Then the monitor switch contacts close.
(2) When the door is closed from the open position, the monitor switch contacts open first. Then the contacts of the secondary interlock switch and door sensing switch close.

If the secondary interlock switch and primary interlock relay (RY2) fail with the contacts closed when the door is opened, the closing of the monitor switch contacts will form a short circuit through the C/T fuse, secondary interlock switch and primary interlock relay (RY2), causing the C/T fuse to blow.

SCHEMATIC
NOTE: CONDITION OF OVEN
1. DOOR CLOSED
2. CLOCK APPEARS ON DISPLAY

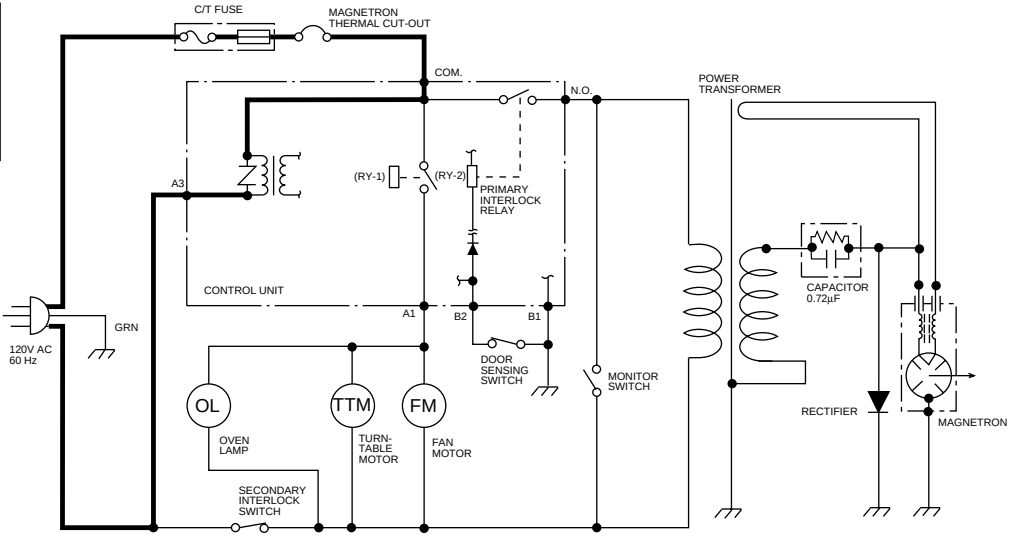


Figure O-1. Oven Schematic-Off Condition

SCHEMATIC

NOTE: CONDITION OF OVEN

1. DOOR OPENED.
2. COOKING TIME PROGRAMMED.
3. DOOR CLOSED.
4. START/MINUTE PLUS BUTTON PUSHED.

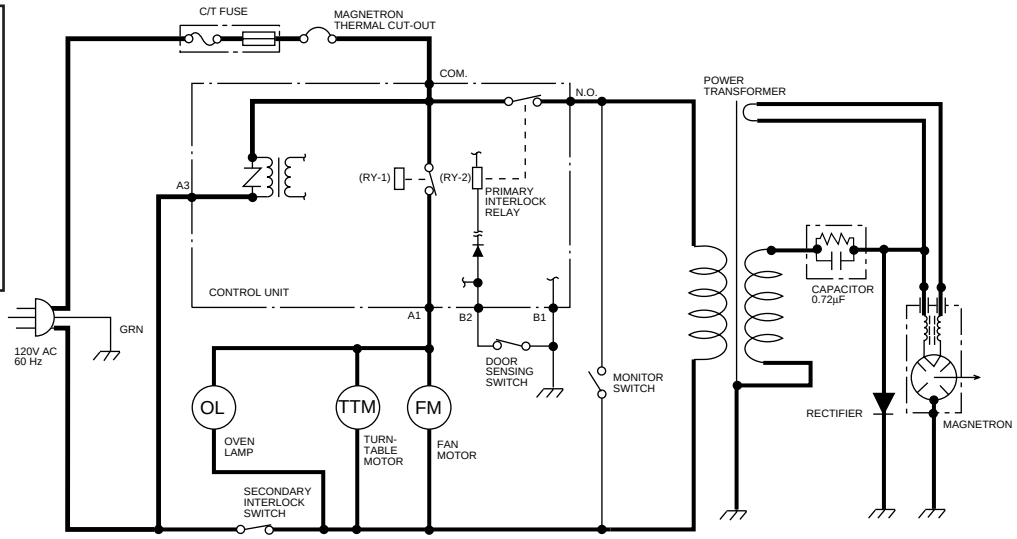


Figure O-2. Oven Schematic-Cooking Condition

DESCRIPTION AND FUNCTION OF COMPONENTS

DOOR OPEN MECHANISM

The door is opened by pulling the door, refer to the Figure D-1.

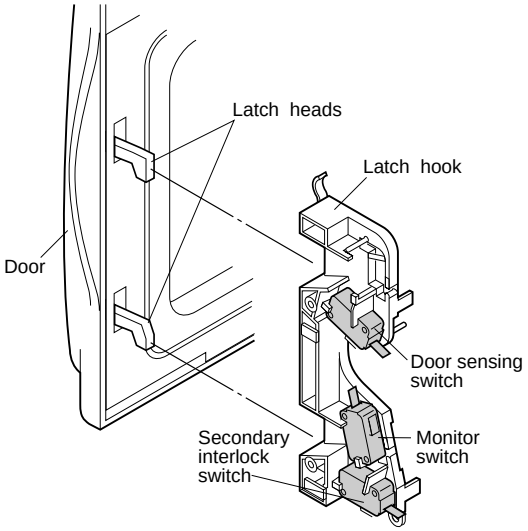


Figure D-1. Door Open Mechanism

DOOR SENSING AND SECONDARY INTERLOCK SWITCHES

The secondary interlock switch is mounted in the lower position of the latch hook and the door sensing switch in the primary interlock system is mounted in the upper position of the latch hook. They are activated by the latch heads on the door. When the door is opened, the switches interrupt the power to all high voltage components. A cook cycle cannot take place until the door is firmly closed thereby activating both interlock switches. The primary interlock system consists of the door sensing switch and primary interlock relay located on the control circuit board.

MONITOR SWITCH

The monitor switch is activated (the contacts opened) by the latch head on the door while the door is closed. The switch is intended to render the oven inoperative, by means of blowing the C/T fuse, when the contacts of the primary interlock relay (RY2) and secondary interlock switch fail to open when the door is opened.

Functions:

1. When the door is opened, the monitor switch contacts close (to the ON condition) due to their being normally closed. At this time the primary interlock relay (RY2) and secondary interlock switch are in the OFF condition (contacts open) due to its being normally open contact switches.
2. As the door goes to a closed position, the monitor switch contacts are first opened and then the door sensing switch and secondary interlock switch contacts close.
3. If the door is opened, and the primary interlock relay (RY2) and the secondary interlock switch contact fail to open, the C/T fuse blows simultaneously with closing of the monitor switch contacts.

CAUTION: BEFORE REPLACING A BLOWN C/T FUSE, TEST THE DOOR SENSING SWITCH, PRIMARY INTERLOCK RELAY (RY2), SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE").

NOTE: C/T FUSE AND MONITOR SWITCH ARE REPLACED AS AN ASSEMBLY

TURNTABLE MOTOR

The turntable motor rotates the turntable located on the bottom of the oven cavity, so that the food on the turntable is cooked evenly. The turntable may turn in either direction.

COOLING FAN MOTOR

The cooling fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This

air is channelled through the oven cavity to remove steam and vapours given off from the heating foods. It is then exhausted through the exhausting air vents at the oven cavity.

MAGNETRON THERMAL CUT-OUT

The thermal cut-out located on the air duct is designed to prevent damage to the magnetron if an over heated condition develops in the tube due to cooling fan failure, obstructed air guide, dirty or blocked air intake, etc.
Under normal operation, the thermal cut-out remains closed. However, when abnormally high temperatures are reached within the magnetron, the thermal cut-out will open at 203˚F (95˚C), causing the oven to shut down. The thermal cut-out will reset automatically below approximately 167˚F(75˚C).

C/T FUSE

1. The C/T fuse blows when the contacts (COM-NO) of the primary interlock relay (RY2) and secondary interlock switch remain closed with the oven door open and when the monitor switch closes.
2. If the wire harness or electrical components are short-circuited, this C/T fuse blows to prevent an electric shock or fire hazard.
3. The C/T fuse, located on the top of the oven cavity, is designed to prevent damage to the oven by fire. If the food load is overcooked, by either error in cook time or defect in the timer, the C/T fuse will open.

Under normal operation, the C/T fuse remains closed. However, when abnormally high temperatures are reached within the oven cavity, the C/T fuse will open at 248˚F (120˚C), causing the oven to shut down or when the electric currents beyond 13A flow, the C/T fuse will open.

TROUBLESHOOTING GUIDE

Never touch any part in the circuit with your hand or an uninsulated tool while the power supply is connected.

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure "section.

IMPORTANT: If the oven becomes inoperative because of a blown C/T fuse, check the monitor switch, primary interlock relay (RY2), door sensing switch and secondary interlock switch before replacing the C/T fuse. If the C/T fuse is replaced, the monitor switch must also be replaced. Use part FFS-BA027WRKZ as an assembly.

IMPORTANT: Whenever troubleshooting is performed with the power supply cord disconnected. It may, in some cases, be necessary to connect the power supply cord after the outer case has been removed, in this event,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Reconnect all leads removed from components during testing.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

CK = Check / RE = Replace

TEST PROCEDURE		RE	CK	A	B	C	D	E	F	F	G	H	RE	RE	CK	I/K	CK	CK	CK	J	L	M	
CONDITION	POSSIBLE CAUSE AND DEFECTIVE PARTS / PROBLEM	SHORT IN POWER CORD	SHORT OR OPEN WIRING	MAGNETRON	POWER TRANSFORMER	H.V. RECTIFIER ASSEMBLY	HIGH VOLTAGE CAPACITOR	MAGNETRON THERMAL CUT-OUT	PRIMARY INTERLOCK SYSTEM	SECONDARY INTERLOCK SWITCH	MONITOR SWITCH	C/T FUSE	OVEN LAMP OR SOCKET	COOLING FAN MOTOR	TURNTABLE MOTOR	CONTROL UNIT OR RELAY	WRONG OPERATION	LOW VOLTAGE	DIRTY OVEN CAVITY	KEY UNIT	COMPU COOK	FOIL PATTERN ON PWB.	
OFF CONDITION	Home fuse blows when power cord is plugged into wall receptacle.	○	○																				
	C/T fuse blows when power cord is plugged into wall receptacle.		○						○		○												
	All letters and indicators do not appear in display when power cord is first plugged into wall outlet.		○					○				○				○		○				○	
	Display does not operate properly when STOP/CLEAR key is touched. (Buzzer should sound and time of day should appear in display.)								○							○				○			
	C/T fuse blows when the door is opened.								○	○													
COOKING CONDITION	Fan motor does not operate. (All other electric components function.)		○											○									
	Oven lamp does not light at all. (All other electric components function.)		○										○										
	Turntable motor does not operate. (All other electric components function.)		○												○								
	Oven does not go into cook cycle when START pad is touched		○						○	○						○							
	Oven seems to be operating but little or no heat is produced in oven load. (Food incompletely cooked or not cooked at all at end of cook cycle.)		○	○	○	○	○		○							○	○	○	○				
	Oven goes into a cook cycle but extremely uneven heating is produced in oven load (food).		○												○		○	○	○				
	Oven lamp, turntable motor and fan motor do not operate.		○							○						○							
	Oven goes into EXPRESS DEFROST but food is not defrosted well.			○												○	○	○	○		○		

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

A **MAGNETRON ASSEMBLY TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. To test for an open filament, isolate the magnetron from the high voltage circuit. A continuity check across the magnetron filament leads should indicate less than 1 ohm.
5. To test for a shorted magnetron, connect the ohmmeter leads between the magnetron filament leads and chassis ground. This test should indicate an infinite resistance. If there is little or no resistance the magnetron is grounded and must be replaced.
6. Reconnect all leads removed from components during testing.
7. Reinstall the outer case (cabinet).
8. Reconnect the power supply cord after the outer case is installed.
9. Run the oven and check all functions.

MICROWAVE OUTPUT POWER

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted).

HIGH VOLTAGES ARE PRESENT DURING THE COOK CYCLE, SO EXTREME CAUTION SHOULD BE OBSERVED.

Power output of the magnetron can be measured by performing a water temperature rise test. This test should only be used if above tests do not indicate a faulty magnetron and there is no defect in the following components or wiring: silicon rectifier, high voltage capacitor and power transformer. This test will require a 16 ounce (453cc) measuring cup and an accurate mercury thermometer or thermocouple type temperature tester. For accurate results, the following procedure must be followed carefully:

1. Fill the measuring cup with 16 oz. (453cc) of tap water and measure the temperature of the water with a thermometer or thermocouple temperature tester. Stir the thermometer or thermocouple through the water until the temperature stabilizes. Record the temperature of the water.
2. Place the cup of water in the oven. Operate oven with selecting more than 60 seconds cook time. Allow the water to heat for 60 seconds, measuring with a stop watch, second hand of a watch or the digital read-out countdown.
3. Remove the cup from the oven and again measure the temperature, making sure to stir the thermometer or thermocouple through the water until the maximum temperature is recorded.
4. Subtract the cold water temperature from the hot water temperature. The normal result should be 18 to 29.2˚F(10 to 16.2˚C) rise in temperature. If the water temperatures are accurately measured and tested for the required time period the test results will indicate if the magnetron tube has low power output (low rise in water temperature) which would extend cooking time or high power output (high rise in water temperature) which would reduce cooking time. Because cooking time can be adjusted to compensate for power output, the magnetron tube assembly should be replaced only if the water temperature rise test indicates a power output well beyond the normal limits. The test is only accurate if the power supply line voltage is 120 volts and the oven cavity is clean.

B **POWER TRANSFORMER TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the primary input terminals and measure the resistance of the transformer with an ohmmeter. Check for continuity of the coils with an ohmmeter. On the R x 1 scale, the resistance of the primary coil should be less than 1 ohm and the resistance of the high voltage coil should be approximately 164 ohms; the resistance of the filament coil should be less than 1 ohm.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
	(HIGH VOLTAGES ARE PRESENT AT THE HIGH VOLTAGE TERMINAL, SO DO NOT ATTEMPT TO MEASURE THE FILAMENT AND HIGH VOLTAGE.)

C HIGH VOLTAGE RECTIFIER TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Isolate the rectifier from the circuit. Using the highest ohm scale of the meter, read the resistance across the terminals and observe, reverse the leads to the rectifier terminals and observe meter reading. If a short is indicated in both directions, or if an infinite resistance is read in both directions, the rectifier is probably defective and should be replaced.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

NOTE: Be sure to use an ohmmeter that will supply a forward bias voltage of more than 6.3 volts.

D HIGH VOLTAGE CAPACITOR TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. If the capacitor is open, no high voltage will be available to the magnetron. Disconnect input leads and check for short or open between the terminals using an ohmmeter.
   Checking with a high ohm scale, if the high voltage capacitor is normal, the meter will indicate continuity for a short time and should indicate an open circuit once the capacitor is charged. If the above is not the case, check the capacitor with an ohmmeter to see if it is shorted between either of the terminals and case. If it is shorted, replace the capacitor.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

E MAGNETRON THERMAL CUT-OUT TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. A continuity check across the thermal cut-out terminals should indicate a closed circuit. If the temperature of the magnetron reaches approximately 203˚F(95˚C), the thermal cut-out opens. The thermal cut-out will reset automatically below approximately 167˚F(75˚C). An open thermal cut-out indicates overheating of the magnetron. Check for restricted air flow to the magnetron, especially the cooling fan air guide.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

CAUTION: IF THE THERMAL CUT-OUT INDICATES AN OPEN CIRCUIT AT ROOM TEMPERATURE, REPLACE THERMAL CUT-OUT.

F SECONDARY INTERLOCK SWITCH TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

of the switch. The meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the secondary interlock switch.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

PRIMARY INTERLOCK SYSTEM TEST

DOOR SENSING SWITCH

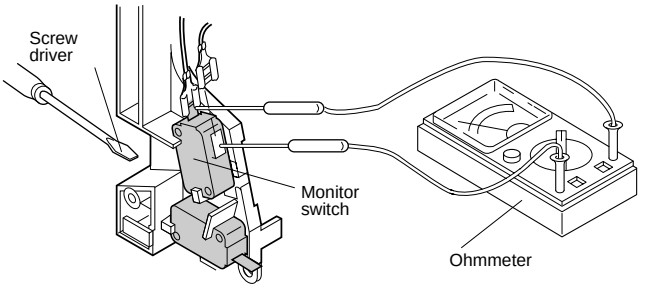
1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Isolate the switch and connect the ohmmeter to the common (COM.) and normally open (NO) terminal of the switch. The meter should indicate an open circuit with the door open and a closed circuit with the door closed. If improper operation is indicated, replace the door sensing switch.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

PRIMARY INTERLOCK RELAY (RY2)

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect two (2) wire leads from the male tab terminals of the Primary Interlock Relay. Check the state of the relay contacts using a ohmmeter. The relay contacts should be open. If the relay contacts are closed, replace the circuit board entirely or the relay itself.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

G **MONITOR SWITCH TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Before performing this test, make sure that the secondary interlock switch and the primary interlock relay are operating properly, according to the above Switch Test Procedure. Disconnect the wire lead from the monitor switch (COM) terminal. Check the monitor switch operation by using the ohmmeter as follows. When the door is open, the meter should indicate a closed circuit. When the monitor switch actuator is pushed by a screw driver through the lower latch hole on the front plate of the oven cavity with the door opened (in this condition the plunger of the monitor switch is pushed in), the meter should indicate an open circuit. If improper operation is indicated, the switch may be defective. After testing the monitor switch, reconnect the wire lead to the monitor switch (COM) terminal and check the continuity of the monitor circuit.
5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.



TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

H **BLOWN C/T FUSE TEST**

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. If the C/T fuse is blown when the door is opened, check the primary interlock relay, secondary interlock switch and monitor switch according to the "TEST PROCEDURE" for those switches before replacing the blown C/T fuse.

CAUTION: BEFORE REPLACING A BLOWN C/T FUSE, TEST THE PRIMARY INTERLOCK RELAY, SECONDARY INTERLOCK SWITCH, DOOR SENSING SWITCH AND MONITOR SWITCH FOR PROPER OPERATION.

If the C/T fuse is blown by improper switch operation, the C/T fuse and monitor switch must be replaced with "C/T fuse and monitor switch assembly" part number FFS-BA027WRKZ, even if the monitor switch operates normally. The C/T fuse and monitor switch assembly is comprised of a 13 ampere fuse and switch.

A continuity check across the C/T fuse terminals should indicate a closed circuit unless the temperature of the C/T fuse reaches approximately 248˚F(120˚C).
An open C/T fuse indicates the oven overheated, Replace the oven C/T fuse and check the inside of the oven cavity, the proper setting of cooking time and the proper operation of control unit. Also check for proper air flow through the ovens venting system. Especially check the cooling fan for proper operation and the air guide for restriction.

CAUTION: IF THE C/T FUSE INDICATES AN OPEN CIRCUIT AT ROOM TEMPERATURE, REPLACE THE C/T FUSE.

5. Reconnect all leads removed from components during testing.
6. Reinstall the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.

I **TOUCH CONTROL PANEL ASSEMBLY TEST**

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter.
In this service manual, troubleshooting by unit replacement is described according to the symptoms indicated.

Before testing,

1) Disconnect the power supply cord and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.

1. Tact switch.
   The following symptoms indicate a defective tact switch.
   a) When touching the pads, a certain pad produces no signal at all.
   b) When touching a number pad, two figures or more are displayed.
   c) When touching the pads, sometimes a pad produces no signal.
2. Control Unit.
   The following symptoms indicate a defective control unit. Before replacing the control unit, perform the tact switch test (Procedure J) to determine if control unit is faulty.

2-1 In connection with pads.
   a) When touching the pads, a certain group of pads do not produce a signal.
   b) When touching the pads, no pads produce a signal.

2-2 In connection with indicators
   a) At a certain digit, all or some segments do not light up.
   b) At a certain digit, brightness is low.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

c) Only one indicator does not light.
d) The corresponding segments of all digits do not light up; or they continue to light up.
e) Wrong figure appears.
f) A certain group of indicators do not light up.
g) The figure of all digits flicker.

2-3 Other possible problems caused by defective control unit.
a) Buzzer does not sound or continues to sound.
b) Clock does not operate properly.
c) Cooking is not possible.

When testing is completed,
1) Disconnect the power supply cord and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Reconnect all leads removed from components during testing.
5) Re-install the outer case (cabinet).
6) Reconnect the power supply cord after the outer case is installed.
7) Run the oven and check all functions.

J TACT SWITCH TEST

1. Disconnect the power supply cord and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. By using an ohmmeter, check the tact switch operation.
5. When the tact switch is not depressed, an ohmmeter should indicate an open circuit. When the tact switch is depressed, an ohmmeter should indicate a short circuit. If improper operation is indicated, the tact switch is probably defective and should be checked.

K RELAY TEST

1. Disconnect the power supply cord and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, re-connect the power supply cord.
7. Remove the outer case and check voltage between Pin No. 3 of the 2 pin connector (A) and the common terminal of the relay RY2 on the control unit with an A.C. voltmeter.
   The meter should indicate 120 volts, if not check oven circuit.

RY1 and RY2 Relay Test
These relays are operated by D.C. voltage
Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.
DC. voltage indicated ..... Defective relay.
DC. voltage not indicated ..... Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 12.0V D.C.	Oven lamp / Turntable motor / Cooling fan motor
RY2	Approx. 12.0V D.C.	Power transformer

8. Disconnect the power supply cord and then remove outer case.
9. Open the door and block it open.
10. Discharge high voltage capacitor.
11. Reconnect all leads removed from components during testing.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

12. Re-install the outer case (cabinet).
13. Reconnect the power supply cord after the outer case is installed.
14. Run the oven and check all functions.

L COMPU COOK TEST

(1) Place one cup of water in the center of the turntable tray in the oven cavity.
(2) Open the door, and touch COMPU COOK pad three times.
(3) Close the door, and then touch the "START" pad.
(4) The oven is in COMPU COOK condition.
(5) The oven will operate as follows. (in case of 1 piece of Rolls/muffins cooking)

1ST STAGE	
LEVEL	TIME
100%	15sec.

(6) If improper cooking time is indicated, the control unit is probably defective and should be checked.

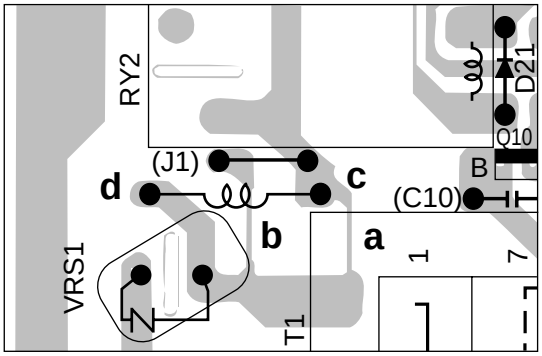
M FOIL PATTERN ON THE PRINTED WIRING BOARD TEST

To protect the electronic circuits, this model is provided with a fine foil pattern added to the primary on the PWB, this foil pattern acts as a fuse.

1. Foil pattern check and repairs.
   1) Disconnect the power supply cord and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Follow the troubleshooting guide given below for repair.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.
2	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

   5) Make a visual inspection of the varistor. Check for burned damage and examine the transformer with a tester for the presence of layer short-circuit (check the primary coil resistance which is approximately 563Ω ± 10%). If any abnormal condition is detected, replace the control unit.



   6) Reconnect all leads removed from components during testing.
   7) Re-install the outer case (cabinet).
   8) Reconnect the power supply cord after the outer case is installed.
   9) Run the oven and check all functions.
2. Follow the troubleshooting guide given below, if indicator does not light up after above check and repairs are finished.
   1) Disconnect the power supply cord and then remove outer case.
   2) Open the door and block it open.
   3) Discharge high voltage capacitor.
   4) Disconnect the leads to the primary of the power transformer.
   5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
   6) After that procedure, re-connect the power supply cord.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST

7) Follow the troubleshooting guide given below for repair.

STEPS	OCCURRENCE	CAUSE OR CORRECTION
1	The rated AC voltage is not present between Pin No. 3 of the 2-pin connector (A) and the common terminal of the relay RY2.	Check supply voltage and oven power cord.
2	The rated AC voltage is present at primary side of low voltage transformer.	Low voltage transformer or secondary circuit defective. Check and replace the control unit.

8) Disconnect the power supply cord and then remove outer case.
9) Open the door and block it open.
10) Discharge high voltage capacitor.
11) Reconnect all leads removed from components during testing.
12) Re-install the outer case (cabinet).
13) Reconnect the power supply cord after the outer case is installed.
14) Run the oven and check all functions.

TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following circuits as shown in the touch control panel circuit.

The principal functions of these circuits and their related signals are explained below.

Tact Switch
Signals generated in the LSI are sent to the tact switches through P10, P11, P12 and P13.
When a tact switch is touched, a signal is completed through the tact switch and passed back to the LSI through AN4, AN5 and AN6 to perform the function that was requested.

Control Unit
Control unit consists of LSI, ACL circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit and synchronizing signal circuit.

1) ACL
This circuit generates a signal which resets the LSI to the initial state when power is supplied.

2) Indicator Circuit
This circuit consists of 4-digits, 12-segments and 3-common electrodes using a Liquid Crystal Display.

3) Power Source Circuit
This circuit generates voltage necessary in the control unit from the AC line voltage. In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	-5V	LSI(IC1)

4) Relay Circuit
To drive the magnetron, fan motor, turntable motor and light the oven lamp.

5) Buzzer Circuit
The buzzer is responsive to signals from the LSI to emit audible sounds (tact switch touch sound and completion sound).

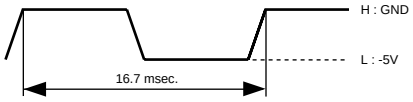
6) Synchronizing Signal Circuit
The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It accompanies a very small error because it works on commercial frequency.

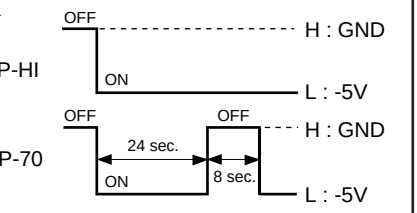
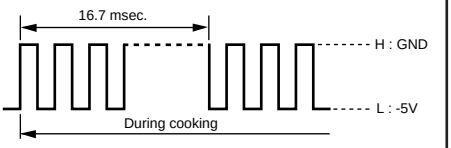
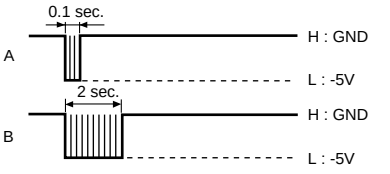
7) Door Sensing Switch
A switch to "tell" the LSI if the door is open or closed.

DESCRIPTION OF LSI

LSI(IXA038DR)

The I/O signal of the LSI(IXA038DR) are detailed in the following table.

Pin No.	Signal	I/O	Description
1	VSS	IN	**Power source voltage: -5V.** VSS voltage of power source circuit input.
2	XIN	IN	**Internal clock oscillation frequency setting input.** The internal clock frequency is set by inserting the capacitor-resistor oscillation circuit with respect to XOUT terminal.
3	XOUT	OUT	**Internal clock oscillation frequency control output.** Output to control oscillation input of XIN.
4	TEST	IN	Connected to VC.
5	VDD	IN	**Power source voltage input terminal.** Connected to GND.
6-7	P21-P22	IN/OUT	Terminal not used.
8	RESET	IN	**Auto clear terminal.** Signal is input to reset the LSI to the initial state when power is supplied. Temporarily set "L" level the moment power is supplied, at this time the LSI is reset. Thereafter set at "H" level.
9	P20	IN/OUT	Terminal not used.
10-12	AIN0-AIN2	IN	**Terminal to change functions according to the Model.** By using the A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its function.
13	INT0	IN	**Signal synchronized with commercial power source frequency.** This is the basic timing for time processing of LSI. 
14	AIN4	IN	**Signal coming from touch tact switch.** When tact switch SW8, SW9 and SW10 on switch matrix is touched, a corresponding signal out of P10-P13 will be input into AIN4.
15	AIN5	IN	**Signal coming from touch tact switch.** When either one of tact switches SW4, SW5, SW6 and SW7 on switch matrix is touched, a corresponding signY\ out of P10-P13 will be input into AIN5.
16	AIN6	IN	**Signal coming from touch tact switch.** When either one of tact switch SW1, SW2 and SW3 on switch matrix is touched, a corresponding signal out of P10-P13 will be input into AIN6 when no key is touched, the signal is held at "H" level.
17	AIN7	IN	**To input signal which communicates the door open/close information to LSI.** Door close "H" level signal (0V). Door open "L" level (-5V).
18	VAREF	IN	Connected to GND.
19	AVDD	IN	Connected to GND.
20	P10	OUT	**Switch strobe signal.** Signal applied to tact switch section. A pulse signal is input to AIN4-AIN6 terminal while one of tact switches SW1, SW5 and SW8 on switch matrix is touched.
21	P11	OUT	**Switch strobe signal.** Signal applied to tact switch section. A pulse signal is input to AIN4-AIN6 terminal while one of tact switches SW2, SW6 and SW9 on switch matrix is touched.
22	P12	OUT	**Switch strobe signal.** Signal applied to tact switch section. A pulse signal is input to AIN4-AIN6 terminal while one of tact switches SW3, SW7 and SW10 on switch matrix is touched.
23	P13	OUT	**Switch strobe signal.** Signal applied to tact switch section. A pulse signal is input to AIN4-AIN6 terminal while tact switch SW4 on switch matrix is touched.
24	P14	IN/OUT	Terminal not used.
25	P15	OUT	Terminal not used.

Pin No.	Signal	I/O	Description
26-27	P16-17	OUT	**Magnetron high-voltage circuit driving signal.** To turn on and off the cook relay (RY2). The signals holds "L" level during micro-wave cooking and "H" level while not cooking. 
28-34	P50-P56	IN/OUT	Terminal not used.
35	P57	OUT	**Oven lamp, fan motor and turntable motor driving signal.** To turn on and off shut off relay (RY1). The square waveform voltage is delivered to the RY1 driving circuit and RY2 control circuit. 
36-39	SEG15-SEG12	IN/OUT	Terminal not used.
40-51	SEG0-SEG11	OUT	**Segment data signal.** Connected to LCD. The relation between signals are as follows: LSI signal (Pin No.) LCD (Pin No.) LSI signal (Pin No.) LCD (Pin No.) SEG 0 (51) ..... S1 SEG 6 (45) ..... S7 SEG 1 (50) ..... S2 SEG 7 (44) ..... S8 SEG 2 (49) ..... S3 SEG 8 (43) ..... S9 SEG 3 (48) ..... S4 SEG 9 (42) ..... S10 SEG 4 (47) ..... S5 SEG 10 (41) ..... S11 SEG 5 (46) ..... S6 SEG 11 (40) S12
52	COM3	OUT	Terminal not used.
53	COM2	OUT	**Common data signal:COM1.** Connected to LCD (Pin No. C3)
54	COM1	OUT	**Common data signal:COM2.** Connected to LCD (Pin No. C2)
55	COM0	OUT	**Common data signal:COM1.** Connected to LCD (Pin No. C1)
56	V3	IN	Connected to GND.
57-58	V1,V2	IN	**Power source voltage input terminal.** Standard voltage for LCD.
59-60	C1-C0	IN/OUT	Terminal not used.
61	P30	OUT	**Signal to sound buzzer (2.0 kHz).** A: tact switch touch sound. B: Completion sound. 
62-64	P31-P33	IN/OUT	Terminal not used.

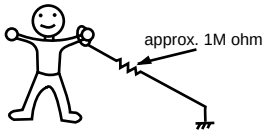
SERVICING

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

In order to protect CMOS LSI.

1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap PW boards containing them in aluminium foil.
2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



2. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven :

CAUTION:
THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING SERVICING AND PRESENTS A HAZARD .

Therefore, before checking the performance of the touch control panel,

1) Disconnect the power supply cord and then remove outer case.
2) Open the door and block it open.
3) Discharge high voltage capacitor.
4) Disconnect the leads to the primary of the power transformer.
5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6) After that procedure, re-connect the power supply cord.

After checking the performance of the touch control panel,

1) Disconnect the power supply cord.
2) Open the door and block it open.
3) Re-connect the leads to the primary of the power transformer.
4) Re-install the outer case (cabinet).
5) Re-connect the power supply cord after the outer case is installed.
6) Run the oven and check all function.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated. For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.

B. On some models, the power supply cord between the touch control panel and the oven proper is so long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if the dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel; it is also possible to check the sensor-related controls of the touch control panel by using the dummy resistor(s).

3. Servicing Tools

Tools required to service the touch control panel assembly.

1) Soldering iron: 30W
(It is recommended to use a soldering iron with a grounding terminal.)
2) Oscilloscope: Single beam, frequency range: DC - 10MHz type or more advanced model.
3) Others: Hand tools

4. Other Precautions

1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.
3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
5) Be sure to use specified components where high precision is required.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING AGAINST HIGH VOLTAGE:

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in severe, possibly fatal, electric shock.
(Example)
High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

WARNING: **Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.**

1. Disconnect the power supply cord.
2. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.
Do not operate the oven if any of the following conditions exist;
1. Door does not close firmly.
2. Door hinge, support or latch hook is damaged.
3. The door gasket or seal is damaged.
4. The door is bent or warped.
5. There are defective parts in the door interlock system.
6. There are defective parts in the microwave generating and transmission assembly.
7. There is visible damage to the oven.

Do not operate the oven:
1. Without the RF gasket (Magnetron).
2. If the wave guide or oven cavity are not intact.
3. If the door is not closed.
4. If the outer case (cabinet) is not fitted.

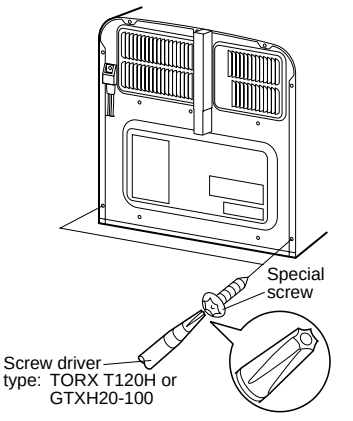
WARNING FOR WIRING

To prevent an electric shock, take the following precautions.
1. Before wiring,
   1) Disconnect the power supply cord.
   2) Open the door and block it open.
   3) Discharge the high voltage capacitor and wait for 60 seconds.
2. Don't let the wire leads touch to the following parts;
   1) High voltage parts:
      Magnetron, High voltage transformer, High voltage capacitor and High voltage rectifier assembly.
   2) Hot parts:
      Oven lamp, Magnetron, High voltage transformer and Oven cavity.
   3) Sharp edge:
      Bottom plate, Oven cavity, Waveguide flange, Chassis support and other metallic plate.
   4) Movable parts (to prevent a fault)
      Fan blade, Fan motor, Switch.
3. Do not catch the wire leads in the outer case cabinet.
4. Insert the positive lock connector until its pin is locked and make sure that the wire leads do not come off even if the wire leads are pulled.
5. To prevent an error function, connect the wire leads correctly, referring to the Pictorial Diagram.

Please refer to 'OVEN PARTS, CABINET PARTS, CONTROL PANEL PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

OUTER CASE REMOVAL

To remove the outer case, procedure as follows.
1. Disconnect the power supply cord.
2. Open the oven door and block it open.
3. Remove the two (2) screws from the lower portion of the rear cabinet using a T20H Torx type or GTXH20-100 screw driver.
4. Remove the remaining five (5) screws from rear of outer case.
5. Slide the entire outer case back out about 1 inch (3 cm) to free it from retaining clips on the cavity face plate.
6. Lift entire outer case from the unit.



CAUTION: 1. DISCONNECT OVEN FROM POWER SUPPLY BEFORE REMOVING OUTER CASE.
2. DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

NOTE: When replacing the outer case, the 2 special Torx screws must be reinstalled in the same locations.

MAGNETRON REMOVAL

1. Disconnect the power supply cord and remove outer case.
2. Open the oven door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from magnetron.
5. Tear the cushion from the magnetron air duct and the exhaust duct.
6. Remove the one (1) screw holding the exhaust duct to the magnetron.
7. Remove the one (1) screw is holding the magnetron air duct to upper beside of the magnetron and the one (1) screw holding the magnetron air duct to lower side of waveguide base.
8. Remove the one (1) screw holding the capacitor holder to the magnetron air duct.
9. Release the H.V. capacitor band from the magnetron air duct.
10. Disconnect the wire leads from magnetron thermal cut-out.
11. Remove the four (4) screws holding the magnetron to the wave guide base of oven cavity.
12. Remove the magnetron from the wave guide.
13. Remove the one (1) screw holding the air duct to the magnetron.
14. Now, the magnetron is free.

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

HIGH VOLTAGE COMPONENTS REMOVAL (HIGH VOLTAGE CAPACITOR AND HIGH VOLTAGE RECTIFIER ASSEMBLY)

To remove the components, proceed as follows.

1. Disconnect the power supply cord and remove outer case.
2. Open the oven door and block it open.
3. Discharge high voltage capacitor.
4. Remove one (1) screw holding capacitor holder to magnetron air duct.
5. Disconnect the H.V. wire of the H.V. rectifier assembly from the magnetron.
6. Disconnect the filament lead of the power transformer from the H.V. capacitor.
7. Remove one (1) screw holding ground side terminal of high voltage rectifier assembly, and remove capacitor holder.
8. Disconnect all the leads and terminals of high voltage rectifier assembly from high voltage capacitor.
9. Now the H.V. rectifier assembly and H.V. capacitor should be free.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTIFIER ASSEMBLY, ENSURE THAT THE CATHODE (GROUND) CONNECTION IS SECURELY FIXED TO THE CAPACITOR HOLDER WITH A GROUNDING SCREW.

CAUTION: DO NOT REPLACE ONLY HIGH VOLTAGE RECTIFIER. WHEN REPLACING IT, REPLACE HIGH VOLTAGE RECTIFIER ASSEMBLY.

POWER TRANSFORMER REMOVAL

1. Disconnect the power supply cord and remove outer case.
2. Open the oven door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads (main wire harness and H.V. wire) from power transformer.
5. Disconnect the lead from magnetron filament.
6. Disconnect the lead of the power transformer from high voltage capacitor.
7. Remove the four (4) screws holding the transformer to top base of oven cavity.
8. Remove the transformer.
9. Now the power transformer is free.

Reinstallation

1. Rest transformer on the top base of oven cavity with its primary terminals toward the right side.
2. Secure transformer with four (4) screws to the top base of oven cavity.
3. Reconnect wire leads (primary and high voltage) and filament leads to the power transformer, magnetron and high voltage capacitor, referring to "Pictorial Diagram".
4. Re-install outer case and check that the oven is operating properly.

CONTROL PANEL ASSEMBLY REMOVAL

1. Disconnect the power supply cord and remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads from the control unit.
5. Remove the two (2) screws holding to the control panel assembly to the oven cavity front flange.
6. Pull the control panel assembly slightly outward from the oven cavity front flange.

7. Then lift up the control panel assembly and release it from the oven cavity.
8. Now, the control panel assembly is free.

NOTE: 1. Before attaching a new key unit, remove remaining adhesive on the control panel frame surfaces completely with alcohol.
2. When attaching the key unit to the control panel frame, adjust the upper edge and right edge of the key unit to the correct position of control panel frame.
3. Stick the key unit firmly to the control panel frame by rubbing with soft cloth not to scratch.

OVEN LAMP AND LAMP SOCKET REMOVAL

1. Disconnect the power supply cord and remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Remove the control panel assembly from the oven cavity front flange. Refer to chapter "CONTROL PANEL ASSEMBLY REMOVAL"
5. Pull the wire leads from the oven lamp socket by pushing the terminal hole of the oven lamp socket with the flat type small screw driver.
6. Disconnect the wire leads from the C/T fuse and magnetron thermal cut-out.
7. Bend the tab of air intake duct holding the oven cavity flange straight.
8. Remove the one (1) screw holding the air intake duct to the bending angle of oven cavity.
9. Slide the air intake duct right hand side then release it from the bending angle of oven cavity .
10. Bend the tab of air intake duct holding the oven lamp socket.
11. Lift up the oven lamp socket.
12. Now, the oven lamp socket is free.

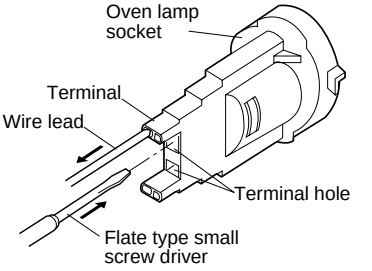


Figure C-1. Oven lamp socket

POSITIVE LOCK® CONNECTOR (NO-CASE TYPE) REMOVAL

1. Disconnect the power supply cord, and remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Push the lever of positive lock® connector.
5. Pull down on the positive lock® connector.

CAUTION: WHEN CONNECTING THE POSITIVE LOCK® CONNECTORS TO THE TERMINALS, CONNECT THE POSITIVE LOCK® SO THAT THE LEVER FACES YOU.

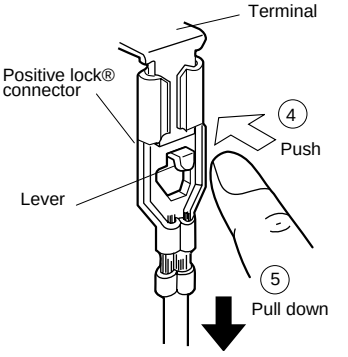


Figure C-2. Positive lock® connector

TURNTABLE MOTOR REMOVAL

Removal

1. Disconnect the power supply cord.
2. Remove the turntable and turntable support from the oven cavity.
3. Turn the oven over.
4. Cut the four (4) bridges holding the turntable motor cover to the bottom plate with the cutting pliers as shown in Figure C-3.

CAUTION: DO NOT DROP THE TURNTABLE MOTOR COVER INTO THE OVEN AFTER CUTTING THE BRIDGES. BECAUSE IT WILL DAMAGE THE WIRE LEADS OF THE MOTOR AND IT IS DIFFICULT TO REMOVE IT OUT OF THE OVEN.

5. Remove the turntable motor cover from the bottom plate.
6. Disconnect the wire leads from the turntable motor.
7. Remove the single (1) screw holding the turntable motor to the oven cavity.
8. Remove the turntable motor from the oven cavity.
9. Remove the O-ring and washer from the turntable motor.
10. Now, the turntable motor is free.

Reinstallation

1. Remove any sharp edges on the turntable motor cover and the bottom plate with the cutting pliers.
2. Re-install the O-ring.
3. Apply the grease (Shinetsu silicone grease G-420 of Sinetsu Chemical Co. Ltd. or Toray Silicone grease SH-14 of Toray Silicone Co., Ltd.) to the O-ring and the base of the turntable motor shaft as shown in Figure C-4.
4. Re-install the turntable motor with the O-ring and washer to the oven cavity with the single (1) screw.
5. Re-connect the wire leads to the turntable motor.
6. Insert the tab of the turntable motor cover into the hole of

the bottom plate as shown in Figure C-3.

7. Re-install the turntable motor cover to the bottom plate with one (1) screw XHTSD40P08RV0 or XFPSD40P08K00 as shown in Figure C-3.

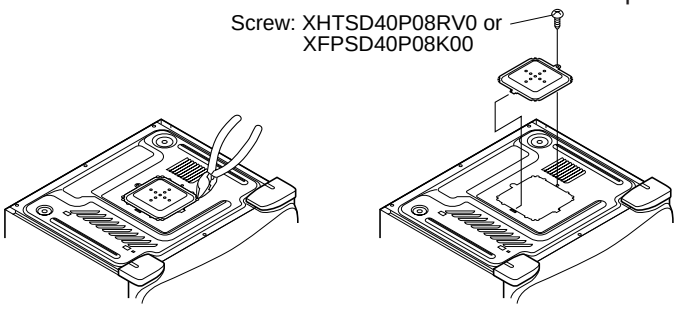


Figure C-3. Turntable Motor Cover

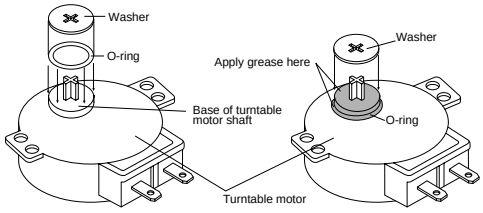


Figure C-4. Washer and O-ring Installation and Grease Applying.

COOLING FAN MOTOR REMOVAL

REMOVAL

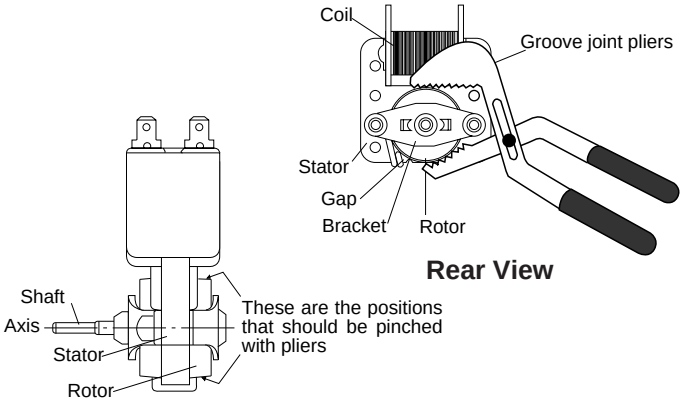
1. Disconnect the power supply cord and remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the wire leads from the fan motor.
5. Disconnect the wire leads from the terminal of power supply cord.
6. Disconnect the green wire leads from the fan duct.
7. Disconnect the high voltage wire and the filament lead wire from H.V. capactor. And disconnect the filament lead wire from the magnetron.
8. Remove the one (1) screw holding the top separator to the fun duct.
9. Remove the one (1) screw holding the chassis support to the fun duct.
10. Lift up the barrier and then pull out from rear side of the oven cavity.
11. Remove the two (2) screws holding the fan duct to the rear side of oven cavity.
12. Remove the two (2) screws holding the fan duct to the top base of oven cavity and one (1) screw holding the fan duct to angle of oven cavity.
13. Release the wire leads from the hole of the fan duct.
14. Release the fan motor assembly from the oven cavity.
15. Remove the fan blade from the fan motor shaft according to the following procedure.
16. Hold the edge of the rotor of the fan motor by using a pair of groove joint pliers.

    CAUTION:

    - **Make sure no metal pieces enter the gap between the rotor and the stator of the fan motor. Because the rotor is easily shaven by pliers and metal pieces may be produced.**
    - **Do not touch the pliers to the coil of the fan motor because the coil may be cut or injured.**
    - **Do not disfigure the bracket by touching with the pliers.**
17. Remove the fan blade assembly from the shaft of the fan motor by pulling and rotating the fan blade with your hand.
18. Now, the fan blade will be free.

    CAUTION:

    - **Do not re-use the removed fan blade because the hole (for shaft) may be larger than normal.**
19. Remove the two (2) screws holding the fan motor to the fan duct.
20. Now, the fan motor is free.



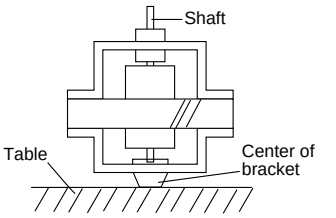
INSTALLATION

1. Install the fan motor to the fan duct with the two (2) screws.
2. Install the fan blade to the fan motor shaft according to the following procedure.
3. Hold the center of the bracket which supports the shaft of the fan motor on the flat table.
4. Apply the screw lock tight into the hole (for shaft) of the fan blade.
5. Install the fan blade to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.

   CAUTION:

   - **Do not hit the fan blade hard when installing because the bracket may become disfigured.**
   - **Make sure that the fan blade rotates smoothly after installation.**
   - **Make sure that the axis of the shaft is not slanted.**
6. Install the fan motor assembly to the oven cavity by fitting the two (2) holes of the fan duct into the tabs of the top base of oven cavity.
7. Re-install the fan duct to the oven cavity with the six (6) screws at same positions during removal.
8. Re-install the chassis support to the fun duct with the one (1) screw.
9. Re-install the top separator to the fun duct with the one (1) screw.

10. Reinstall the barrier to the oven cavity by fitting the hooks of the barrier into the hols of the rear side of oven cavity.
11. Reinstall all wire leads released from the hole of the fan duct.
12. Connect the wire leads to the fan motor, power supply cord, H.V. capacitor, magnetron, referring to the pictorial diagram.



DOOR SENSING SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

1. Disconnect the power supply cord and remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect wire leads from the switches.
5. Remove two (2) screws holding latch hook to oven flange.
6. Remove latch hook assembly from oven flange.
7. To remove the switch.

7-1. Push outward on the tab that is holding the switch, and turn the switch so that the pole is on the axis.

7-2. Pull out the switch from the latch hook. Do not break the pole or tab of the latch hook.

7-3. Now the switch is free.

Reinstallation

1. Re-install each switch in its place. The secondary interlock switch is in the lower position and the monitor switch is in the middle position. The door sensing switch is in the upper position.
2. Re-connect wire leads to each switch. Refer to chapter "Pictorial Diagram".
3. Secure latch hook (with two (2) mounting screws) to oven flange.
4. Make sure that monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure", and Adjustment Procedure below.

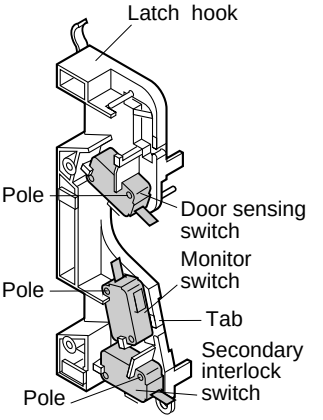


Figure C-5. Latch Switch Removal

DOOR SENSING SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH ADJUSTMENT

1. Disconnect the power supply cord and remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

If the door sensing switch, secondary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.

4. Loosen the two (2) screws holding the latch hook to the flange of the oven front face.
5. With the door closed, adjust latch hook by moving it back and forth and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The horizontal position of the latch hook should be adjusted so that the monitor switch is activated with the door closed. The vertical position of the latch hook should be adjusted so that the door sensing switch and the secondary interlock switch are activated with the door closed.
6. Secure the screws firmly.
7. Check the operation of all switches. If each switch has not activated with the door closed, loosen screw and adjust the latch hook position.

After adjustment, make sure of the following.

1. In and out play of the door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of door toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The contacts of door sensing switch and secondary interlock switch open within 1.5 mm gap between right side of cavity face plate and door when door is open.
3. The monitor switch contacts close when the door is opened.
5. Re-install outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

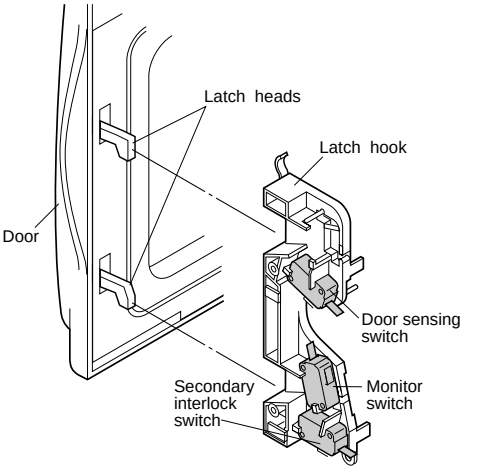


Figure C-6. Latch Switch Adjustments

DOOR REPLACEMENT

REMOVAL

1. Disconnect the power supply cord.
2. Open the door slightly.
3. Insert a putty knife (thickness of about 0.5mm) into the gap between the door stopper and corner portion of choke cover.
4. Pry the door stopper by inserting a putty knife to release from door panel shown in figure C-7.
5. Release two (2) pins of door panel from two (2) holes of upper and lower oven hinges by lifting up.
6. Now, door assembly is free from oven cavity.
7. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and corner portion of door panel as shown in Figure C-7 to free engaging parts.
8. Pry the choke cover by inserting a putty knife in order shown in figure C-7.
9. Release choke cover from door panel.
10. Now choke cover is free.

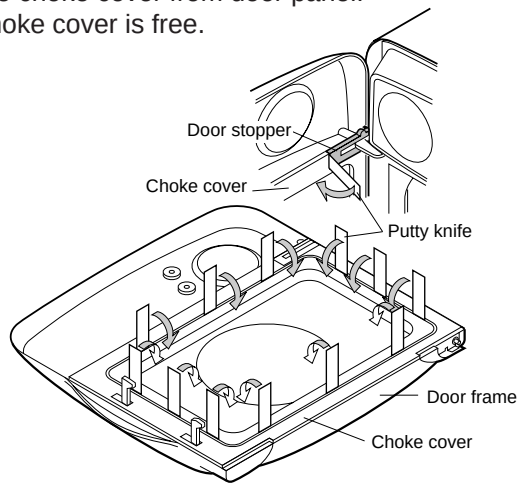


Figure C-7. Door Disassembly

11. Release door panel from door frame by removing four (4) screws.
12. Now, door panel with sealer film is free.
13. Tear sealer film from door panel.
14. Now, door panel is free.
15. Slide latch head upward and remove it from door frame with releasing latch spring from door frame and latch head.
16. Now, latch head and latch spring are free.
17. Release the two (2) buttons with spring from holes of door frame.
18. Now, door frame is free.

REINSTALLATION

1. Re-install the two (2) buttons with spring to the hols of door frame.
2. Re-install latch spring to the head. Re-install latch spring to the door frame. Re-install latch head to the door frame.
3. Re-install door panel to door frame by putting on two (2) located pins of door frame.
4. Hold the door panel to the door frame with the four (4) screws.
5. Put sealer film on door panel. Refer to "Sealer Film" and Figure C-9, on how to handle the new film.
6. Re-install choke cover to door panel by pushing.
7. Catch two (2) pins of door panel on two (2) hole of upper and lower oven hinges.
8. Re-install door stoper to door panel by pushing.

Note: After any service to the door;

(A) Make sure that door sensing switch, secondary interlock switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".).

(B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

After any service, make sure of the following :

1. Door latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Door is positioned with its face pressed toward cavity face plate.
4. Check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

NOTE: The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven door is not abnormal and do not of themselves, indicate a leakage of microwave energy from oven cavity.

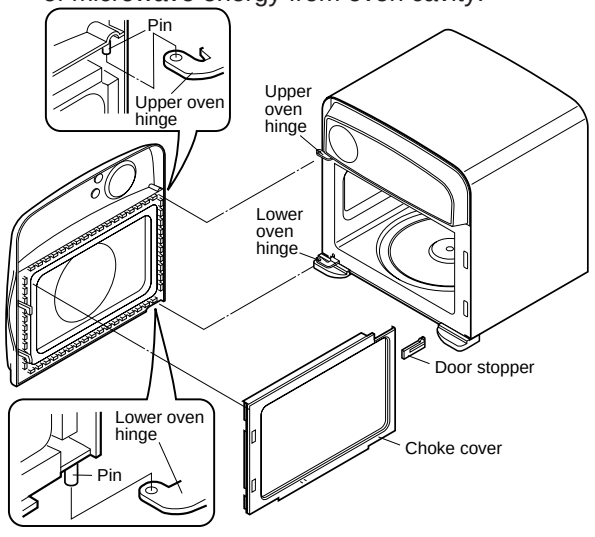


Figure C-8. Door Replacement

SEALER FILM

Installation

1. Put the adhesive tape on the backing film of the sealer film as shown in Fig. C-9.
2. Tear the backing film by pulling the adhesive tape.
3. Put the pasted side of the sealer film on the door panel.

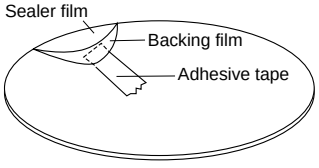


Figure C-9. Sealer film

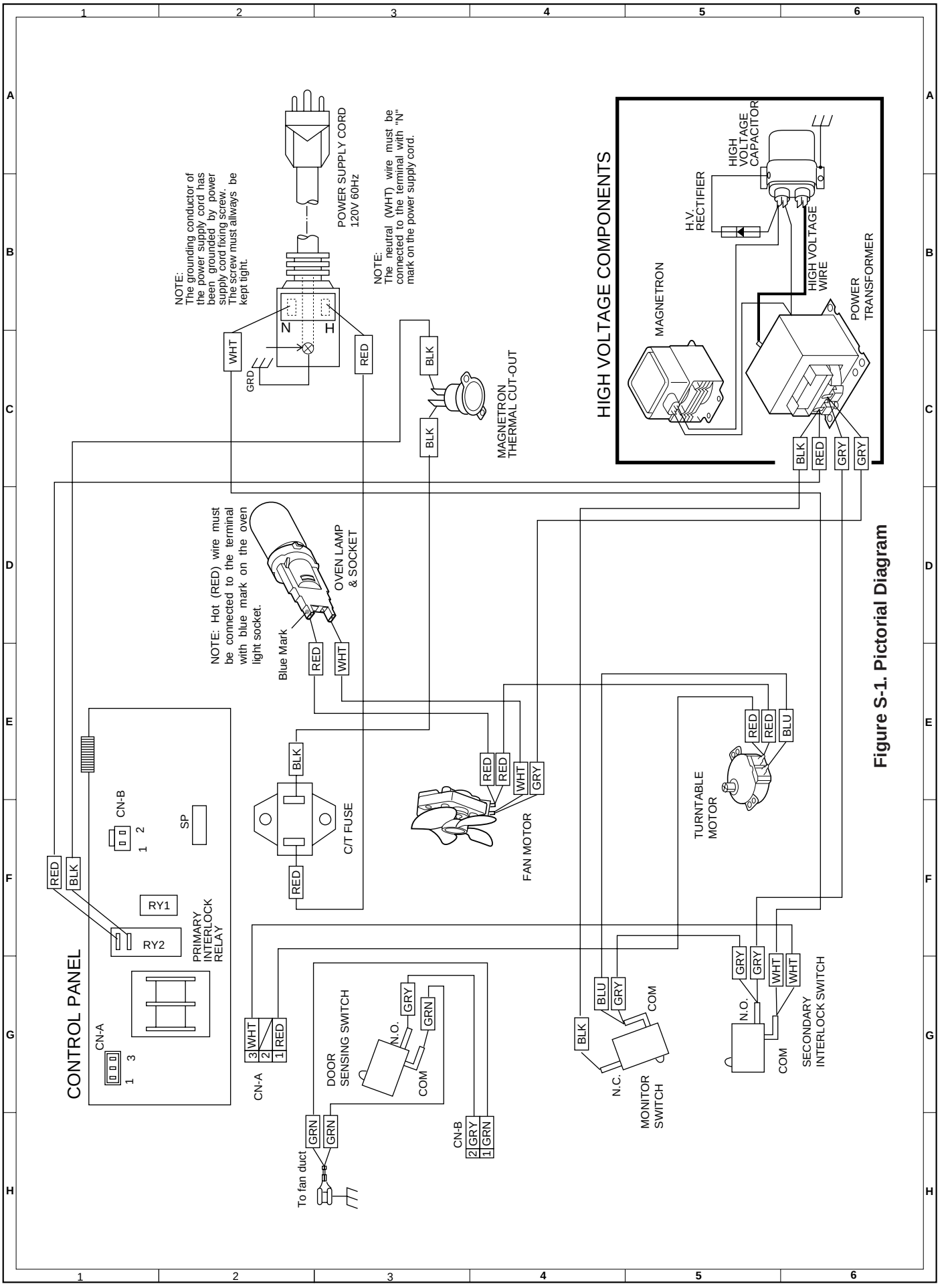


Figure S-1. Pictorial Diagram

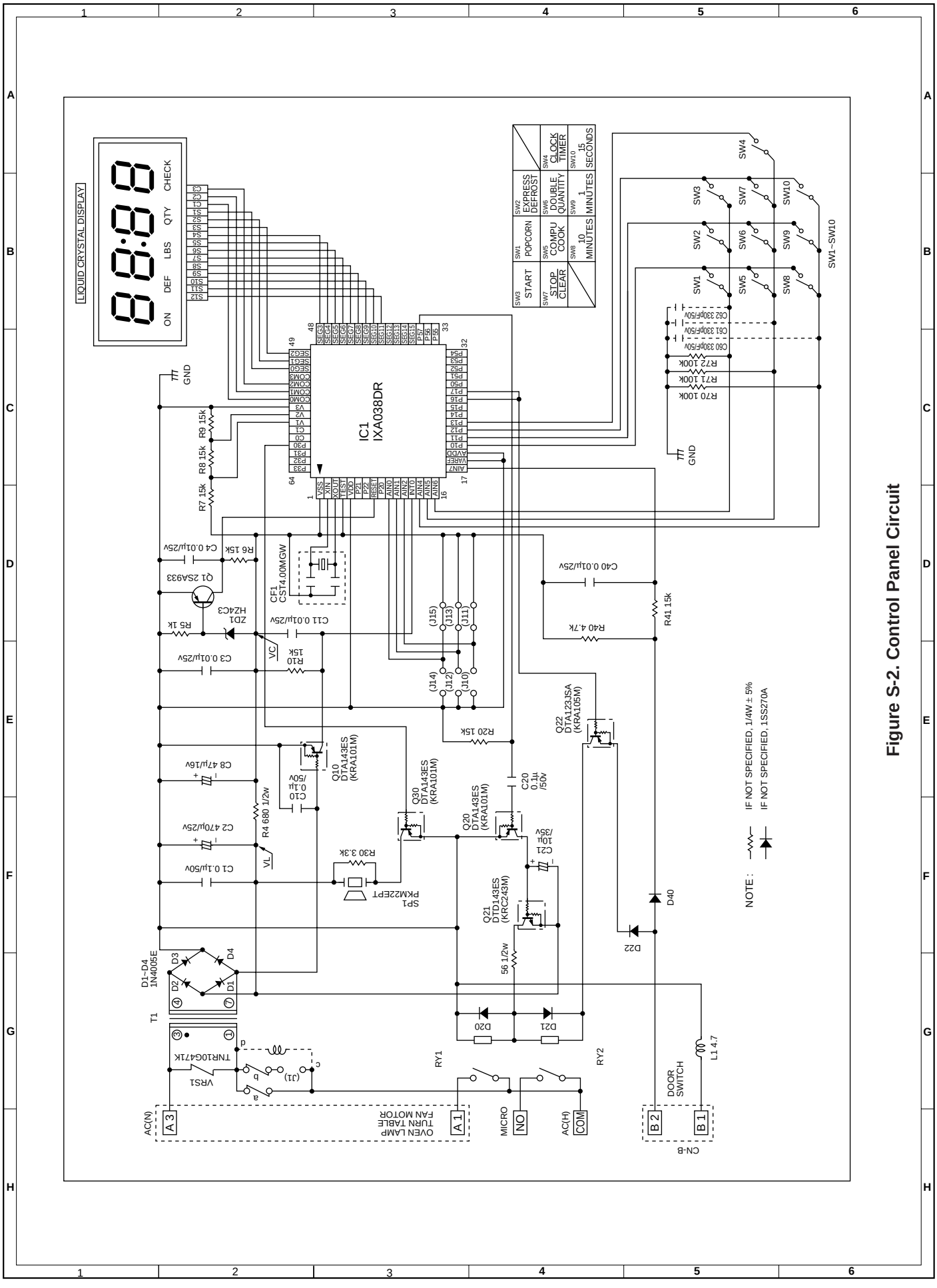


Figure S-2. Control Panel Circuit

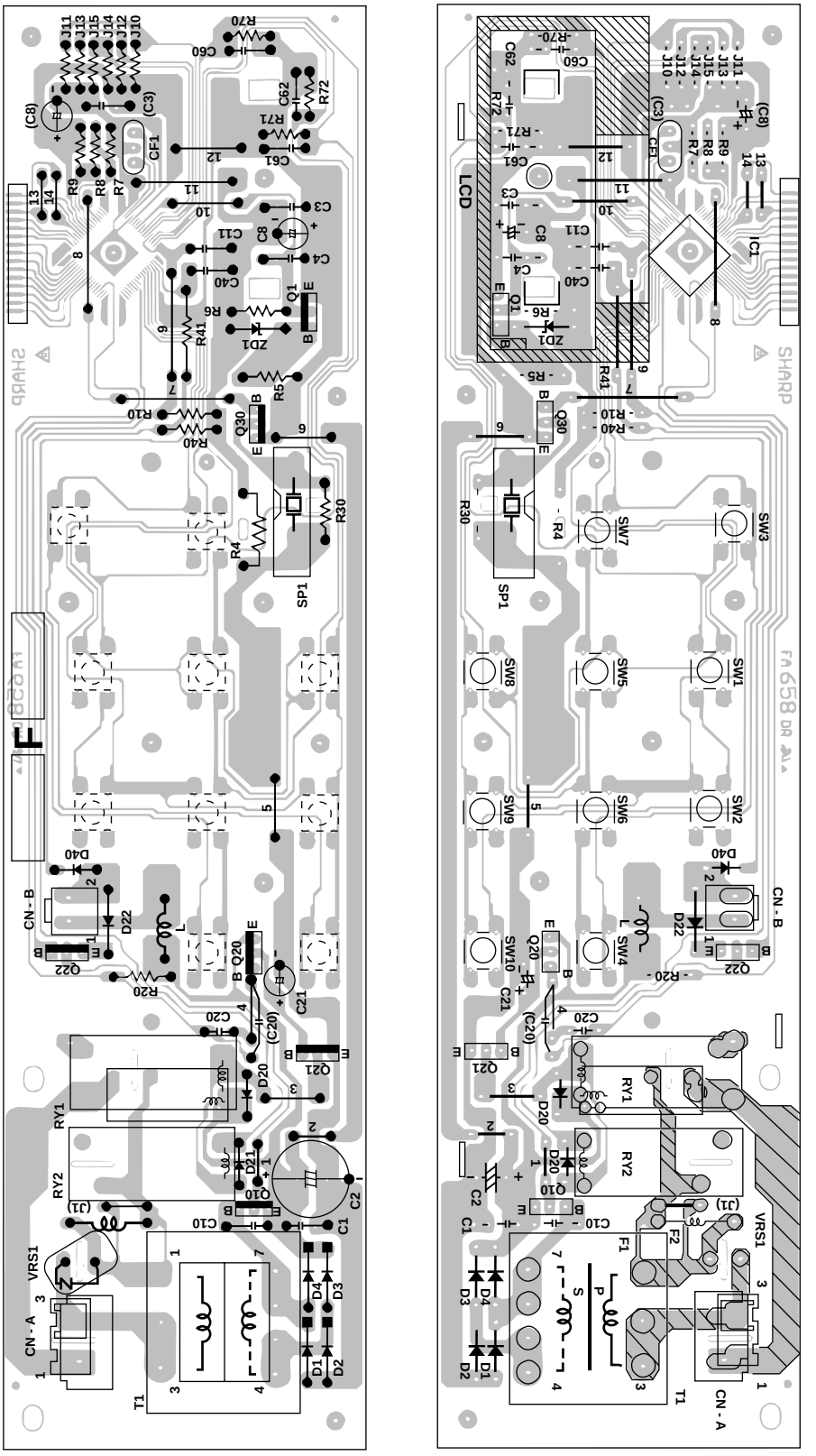


Figure S-3. Printed Wiring Board

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.
The parts marked "*" are used in voltage more than 250V.

	REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
			ELECTRIC PARTS		
	1- 1	QSW-MA137WRE0	Secondary interlock switch & door sensing switch	2	AH
	1- 2	FFS-BA027WRKZ	C/T fuse (120˚C, 13A) & monitor switch (AM51620C53Y1) assembly	1	AS
	1- 3	FACCDA079WRE0	Power supply cord	1	AF
	1- 4	QSOCLA021WRE0	Oven lamp socket	1	AH
*	1- 5	FH-DZA095WRKZ	High voltage rectifier	1	AQ
*	1- 6	RC-QZA209WRE0	High voltage capacitor	1	AX
*	1- 7	RMOTEA383WRE0	Fan motor	1	AV
*Δ	1- 8	RV-MZA195WRE0	Magnetron	1	BK
	1- 9	RLMPTA068WRE0	Oven lamp	1	AG
	1-10	RMOTDA211WRE0	Turntable motor	1	AS
	1-11	RTHM-A117WRE0	Thermal cut-out 95˚C	1	AQ
*	1-12	RTRN-A606WRZZ	Power transformer	1	BM
			CABINET PARTS		
	2- 1	GCABUA754WRPZ	Outer case cabinet [R-120DB]	1	BC
	2- 1	GCABUA763WRPZ	Outer case cabinet [R-120DK]	1	BC
	2- 1	GCABUA765WRPZ	Outer case cabinet [R-120DR]	1	BC
	2- 1	GCABUA761WRPZ	Outer case cabinet [R-120DW]	1	BC
	2- 2	GDAI-A325WRWZ	Bottom plate	1	AF
	2- 3	GLEGPA074WRE0	Foot	2	AC
			CONTROL PANEL PARTS		
	3- 1	DPWBFC045WRUZ	Control unit	1	BB
	3- 2	FPNLCB485WRKZ	Panel frame with key unit	1	AY
	3- 2-1	HPNLCB607WRFZ	Control panel	1	AN
	3- 2-2	PSHEPA723WREZ	Key sheet	1	AM
	3- 3	PPACGA175WREZ	Packing	1	AF
			OVEN PARTS		
Δ	4- 1	PHOK-A117WRPZ	Latch hook	1	AH
	4- 2	PDUC-A740WRWZ	Air intake duct	1	AD
	4- 3	LBNDKA132WRP0	H.V. Capacitor holder	1	AD
	4- 4	PDUC-A736WRPZ	Magnetron air duct	1	AF
	4- 5	PDUC-A743WRPZ	Exhaust duct	1	AD
	4- 6	PCUSUA541WRPZ	Cushion	1	AC
	4- 7	PDUC-A745WRWZ	Fan duct	1	AE
	4- 8	NFANJA029WRE0	Fan blade	1	AL
	4- 9	PCUSUA540WRPZ	Cushion	1	AC
	4-10	PDUC-A752WRFZ	Top air separator	1	AD
Δ	4-11	**********	Oven cavity **(Not replaceable part)**	1	--
	4-12	PCOVPA359WREZ	Waveguide cover	1	AD
	4-13	GLEGPA078WRFZ	Leg (Left)	1	AE
	4-14	GLEGPA079WRFZ	Leg (Right)	1	AE
	4-15	PDUC-A746WRFZ	Air separator	1	AE
	4-16	PSKR-A367WRFZ	Barrier	1	AE
	4-17	PCUSGA541WRPZ	Cushion	2	AC
	4-18	PPACGA097WRE0	O-ring	1	AG
	4-19	PCUSUA542WRPZ	Cushion	1	AC
	4-20	PCUSUA527WRP0	Cushion	1	AE
	4-21	PCUSUA543WRPZ	Cushion	1	AC
	4-22	PCUSUA544WRPZ	Cushion	1	AC
	4-23	LANGTA369WRPZ	Chassis support	1	AF
	4-24	PDUC-A753WRPZ	Air duct	1	AE
	4-25	LANGTA370WRPZ	Support angle	1	AD
			DOOR PARTS		
Δ	5- 1	FDORFA341WRTZ	Door panel	1	AX
	5- 2	GWAKPA705WRRZ	Door frame [R-120DB]	1	AY
	5- 2	GWAKPA719WRRZ	Door frame [R-120DK]	1	AY
	5- 2	GWAKPA721WRRZ	Door frame [R-120DR]	1	AY
	5- 2	GWAKPA717WRRZ	Door frame [R-120DW]	1	AY
	5- 3	JBTN-B119WRFZ	START/MINUTE PLUS button and STOP/CLEAR button	2	AE
	5- 4	MSPRTA196WREZ	Button spring	2	AC
Δ	5- 5	LSTPPA194WRFZ	Latch head	1	AE
	5- 6	MSPRTA084WRE0	Latch spring	1	AB
	5- 7	PSHEPA722WREZ	Sealer film	1	AE
	5- 8	GCOVHA418WRFZ	Choke cover	1	AL
	5- 9	LSTPPA196WRFZ	Door stopper	1	AC

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
5-10	XCPSD40P08000	Screw : 4mm x 8mm	8	AA

MISCELLANEOUS

	6- 1	FROLPA089WRK0	Turntable support	1	AP
	6- 2	NTNT-A060WRE0	Turntable	1	AP
	6- 3	TINSEA831WRRZ	Instruction book	1	AD
	6- 4	FW-VZB784WREZ	Switch harness	1	AF
	6- 5	FW-VZB773WREZ	Main wire harness	1	AR
*	6- 6	QW-QZA239WRZZ	High voltage wire	1	AH
	6- 7	TCAUAA166WRR0	DHHS caution label	1	AC
	6- 8	TCAUAA258WRRZ	Monitor caution	1	AC
	6- 9	TCAUAA240WRR0	Screw caution	1	AC

SCREWS AND WASHERS

	7- 1	XEPSD30P08KS0	Screw : 3mm x 8mm	6	AA
	7- 2	XOTSD40P08000	Screw : 4mm x 8mm	20	AA
	7- 3	LX-EZA042WRE0	Special screw	4	AB
	7- 4	LX-CZ0052WRE0	Special screw	2	AA
	7- 5	LX-CZA070WRE0	Special screw (Torx tamper proof screw)	2	AC
	7- 6	LX-WZA028WRE0	Special washer	1	AB
	7- 7	XHTSD40P12RV0	Screw : 4mm x 12mm	1	AA
	7- 8	XHPSD40P08K00	Screw : 4mm x 8mm	6	AA
	7- 9	XHPSD30P06000	Screw : 3mm x 6mm	2	AA
	7-10	XHTSD40P08RV0	Screw : 4mm x 8mm	6	AA
	7-11	XOTSD40P12RV0	Screw : 4mm x 12mm	4	AA
	7-12	XOTWW40P08000	Screw : 4mm x 8mm	2	AB
	7-13	XHTSD40P08000	Screw : 4mm x 8mm	1	AA
	7-14	XETSD40P08000	Screw : 4mm x 8mm	2	AA

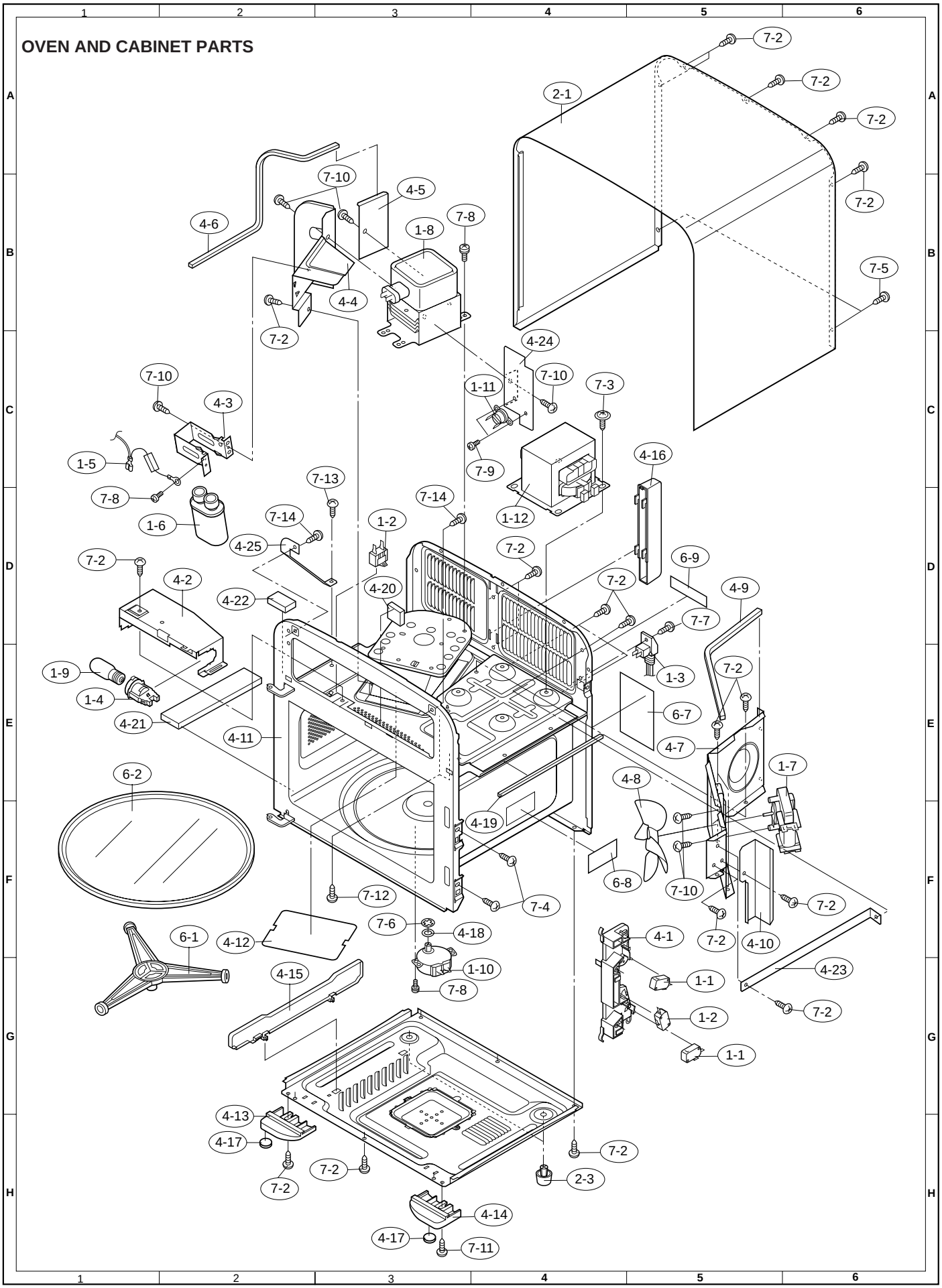
HOW TO ORDER REPLACEMENT PARTS

To have your order filled promptly and correctly, please furnish the following information.

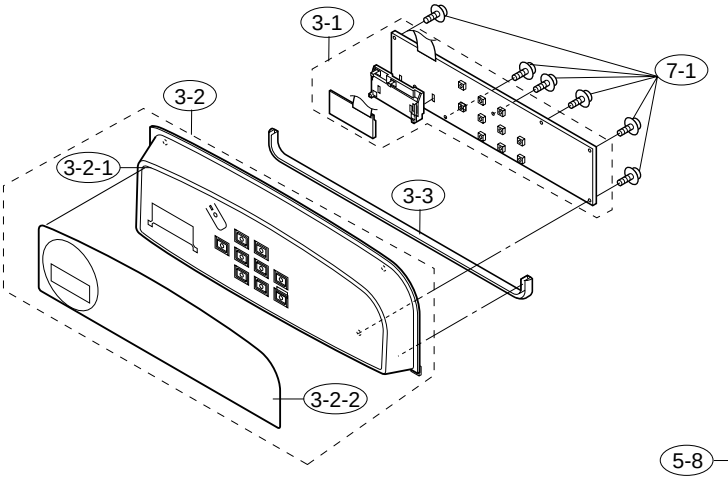
1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

Order Parts from the authorized SHARP parts Distributor for your area.
Defective parts requiring return should be returned as indicated in the Service Policy.

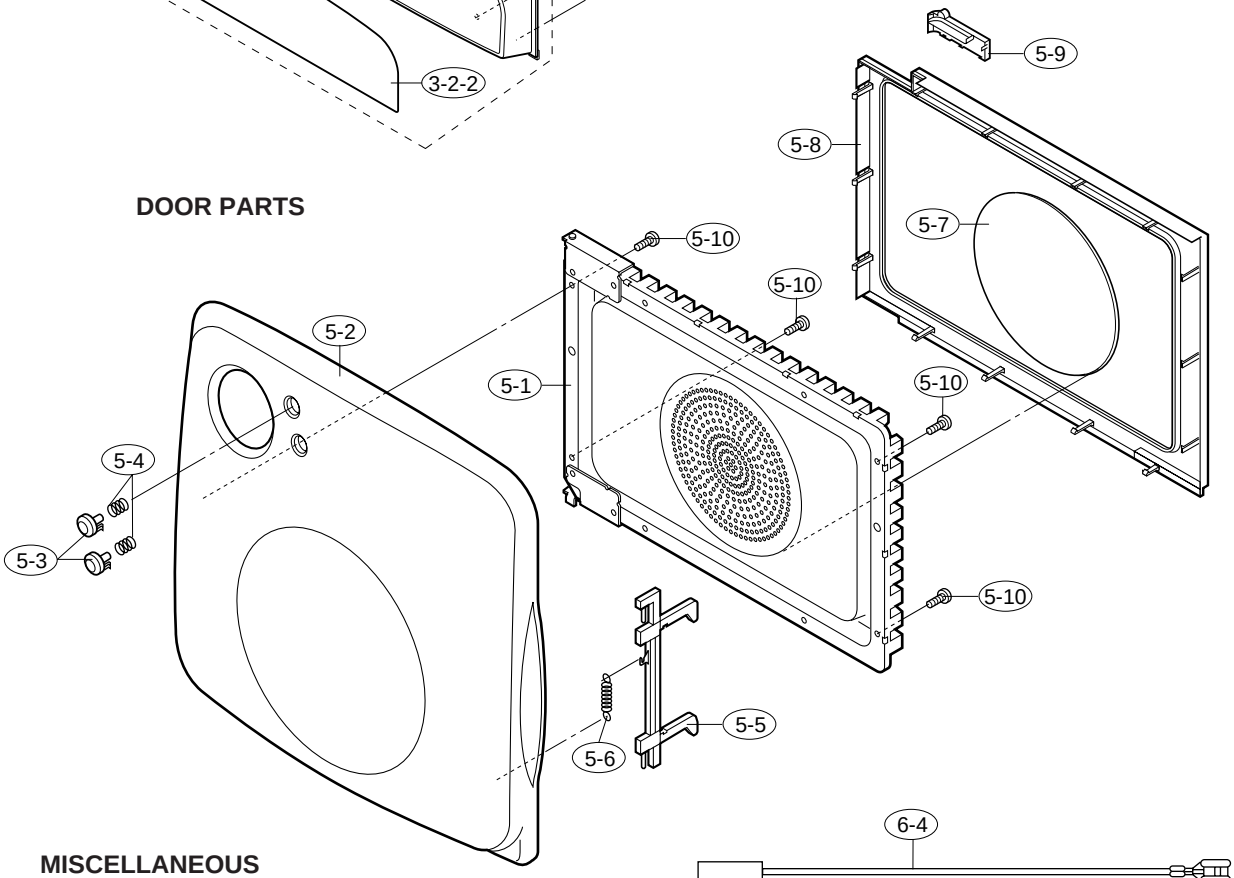
OVEN AND CABINET PARTS



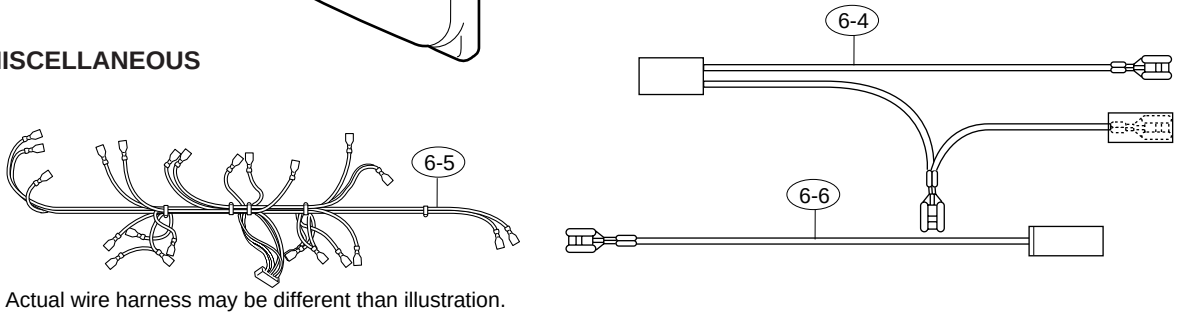
CONTROL PANEL PARTS



DOOR PARTS

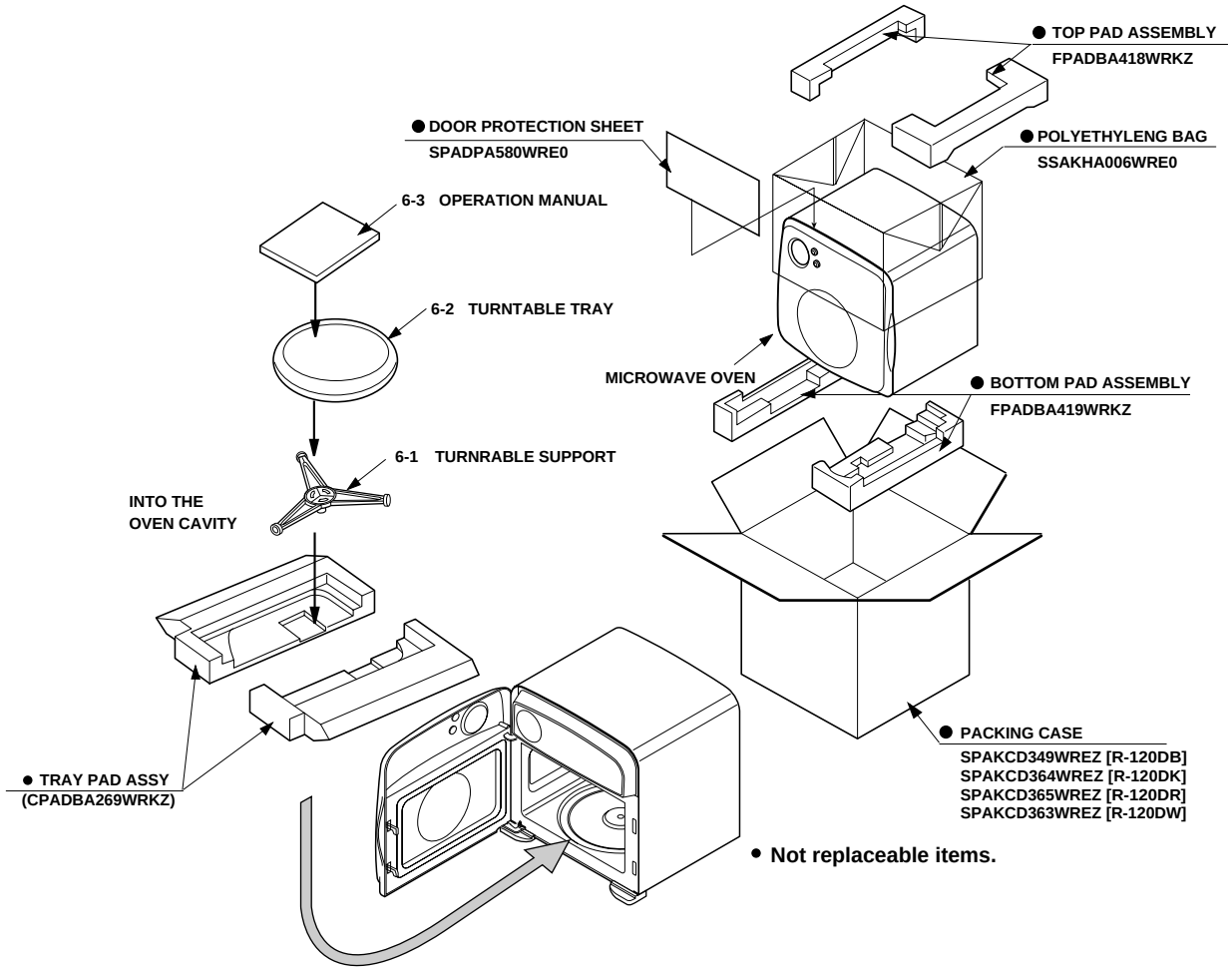


MISCELLANEOUS



Actual wire harness may be different than illustration.

PACKING AND ACCESSORIES



• Not replaceable items.

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